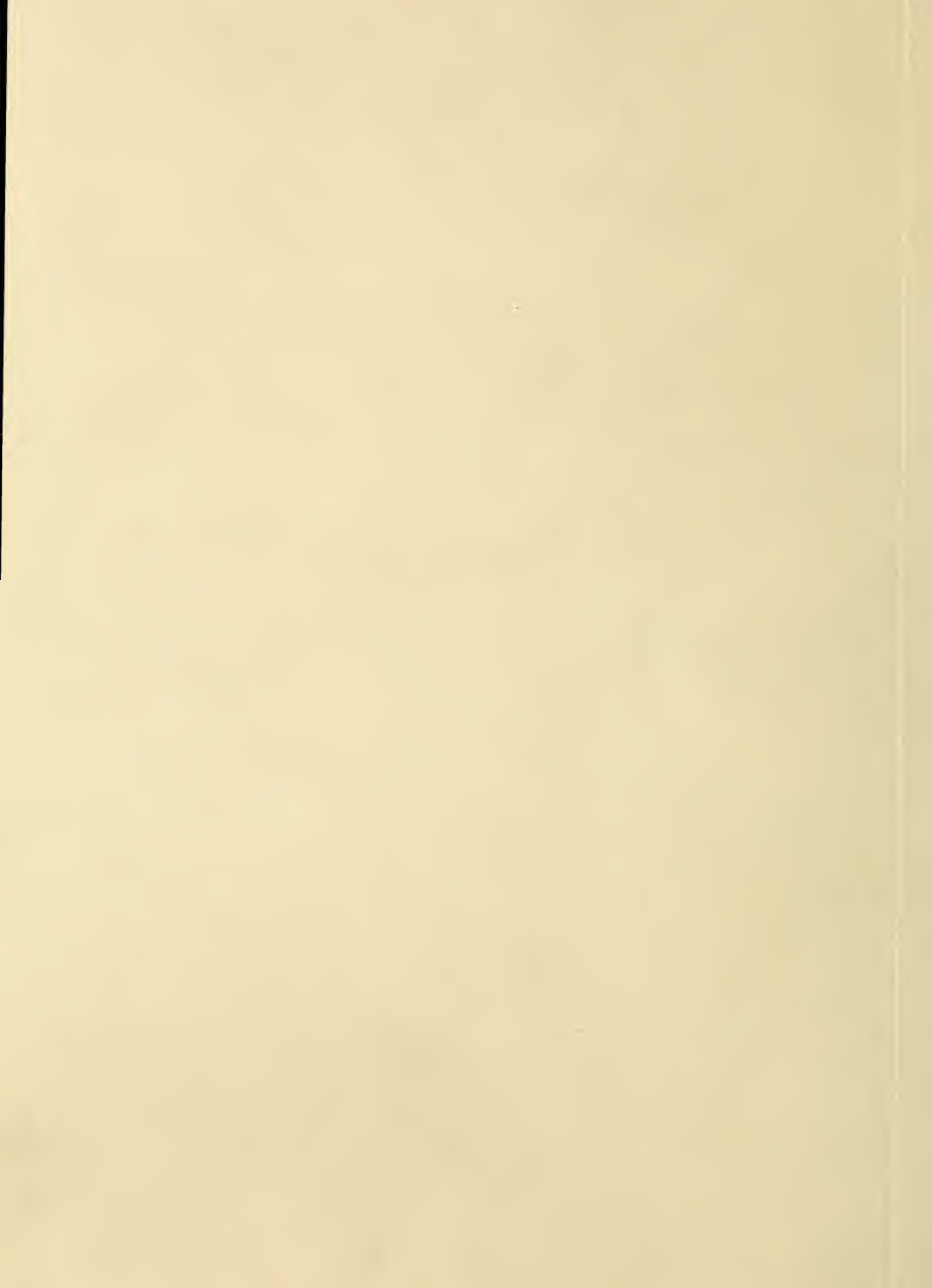


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THE SOYBEAN CYST NEMATODE

A New Pest



PA-333

UNITED STATES DEPARTMENT OF AGRICULTURE



The SOYBEAN CYST NEMATODE

A New Pest

The soybean cyst nematode¹ attacks the roots of soybeans, lespedeza, common vetch, snap beans, and adzuki beans.

Nematodes are worms. Their life cycle is in three stages—egg, larva, and adult.

Larvae and adults of the soybean cyst nematode are barely visible. The eggs are enclosed in lemon-shaped cysts, which are also barely visible.

How and when this nematode arrived in the United States have not been determined, but it was discovered in August 1954, when a North Carolina farmer reported what proved to be nematode damage.

DAMAGE

Soybean plants damaged by nematodes are yellow, stunted, and low in yield. A severe infestation can destroy a crop.

Prospects on some infested fields were so poor that farmers did not harvest the soybeans. One farmer who did harvest an infested field obtained 4 bushels of soybeans per acre.

SPREAD

This nematode also has been found in Tennessee, Missouri, and Arkansas.

¹ *Heterodera glycines* Ichinohe.

Plant pest control authorities are determining boundaries of infested locations.

The soybean cyst nematode is spread when soil containing the cysts is moved. It can move through the soil, by its own efforts, only a few inches a year.

Cysts may be carried in soil that clings to machinery, equipment, root crops, containers, and other objects.

The more cysts, the greater the chance that some will be moved.

HOW IT LIVES

The cyst of the soybean cyst nematode is the egg-filled carcass of a female. It is highly resistant to decay. It lies in the soil and protects the eggs, which may remain viable many years. The eggs contain the larvae.

Upon emerging from an egg, a larva moves toward the roots of the host plant, burrows in, and starts feeding. It punctures cell walls and sucks plant juices. During the feeding, it injects digestive chemicals into the plant. Chemicals injected into an infested plant may stunt it and cause it to turn yellow.

Larvae mature in the roots. Adult males leave the roots and live in the soil. The females remain in the roots.

The adult female is white at first,

THE ILLUSTRATIONS: Stunted, yellow soybeans in the cover illustration show typical symptoms of severe soybean cyst nematode infestation. Roots of an infested plant will have females and cysts attached as shown on page 3. Females change from white to yellow as they mature, and darken to brown when they die and become cysts.

THE SOYBEAN CYST NEMATODE

A, Adult male nematode.

B, Mature cysts, (note colors).

C, Larvae entering young roots.

D, Root with females protruding.

Females change from white to yellow, darkening as they mature.

E, Females, at various stages of development, attached to root.

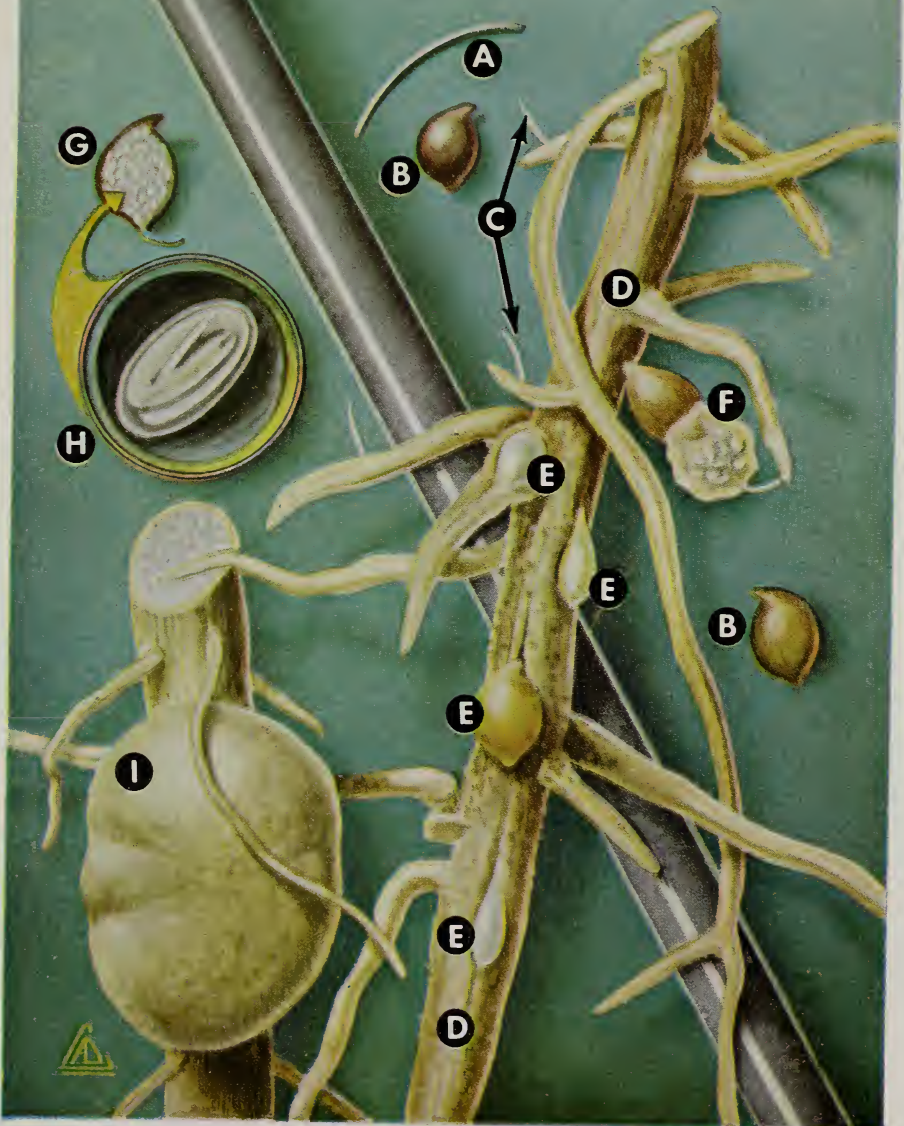
F, Female exuding gelatinous egg mass.

G, Eggs in cyst.

H, Larva in egg, (greatly magnified).

I, Nodule of nitrogen-fixing bacteria.

J, Common pin (shows degree of magnification).



then changes to yellow. As she feeds in the root, her body swells, becomes lemon shaped, splits the root surface, and protrudes. She then mates with a male, and begins to lay eggs. The male dies after mating.

The female lays some eggs in a gelatinous mass outside her body; but when she dies, hundreds of eggs remain inside her body. The carcass, darkening from yellow to brown, becomes the cyst.

DETECTION

Investigators who suspect the presence of soybean cyst nematodes in a field look for cysts. If nematodes are present, the soybean roots will have females and cysts attached to them. Careful observers can find the cysts without the aid of a magnifying glass.

Finding cysts on soybean roots identifies them. Only one cyst-forming nematode attacks soybeans.

Cysts in soil samples can be found by a floating and sieving process, which requires special equipment. Identifying cysts found in places other than on soybean plant roots requires a specialist.

Specialists' assistance is available through State and Federal experiment stations, county agricultural agents, and State pest-control officials.

CONTROL

Present control of the soybean cyst nematode lies in (1) keeping soil free of host plants, (2) preventing movement of soil from infested to noninfested places. Research to discover other controls is under way.

HOW YOU CAN HELP

You can help control the soybean cyst nematode.

1. Learn to recognize the symptoms of infestation. Usually, they are stunted, yellow plants and reduced yields.

2. Ask help in determining whether your farm is infested.

3. Do not grow soybeans, lespedeza, common vetch, snap beans, or adzuki beans on infested soil.

4. Guard against movement of soil—even in small amounts. For example: Do not bring used machinery onto your farm unless it has been thoroughly cleaned. . . . Clean your shoes thoroughly after you walk through muddy fields that may be nematode infested.

. . . Try to enlist farm workers' assistance in controlling nematodes. . . . Inoculate soybeans with commercial inoculant only. . . . Market produce in clean containers. . . . Wash root crops grown in infested fields before you market them. . . . Clean gladiolus corms and daffodil bulbs grown on infested soil. Dip them 15 minutes in an 85-percent solution of sodium trichlorophenate (3 pounds of Dowcide B per 100 gallons of water). . . . Wash soil from all bulbs and rhizomes that chemicals may damage.

For more information write to the Plant Pest Control Division, U. S. Department of Agriculture, Washington, D. C., or ask your county agent.

PREPARED BY THE PLANT PEST CONTROL DIVISION
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